CLAIMS

What is claimed is:

1. A system comprising:

a plurality of ports for sending and receiving frames;

a local switching device that performs high-speed switching;

a local forwarding database corresponding and coupled to the local switching device, the database allowing the local switching device to look up a known address that has been previously obtained and forward the frames based on the known address; and

a remote switching processing device that receives and processes frames, wherein the local switching device learns associations between Media Access Control (MAC) addresses and ports by having the local switching device forward unknown address frames to the remote switching processing device, and the remote switching processing device update the local forwarding database corresponding to the local switching device based on the forwarded frames.

2. The system of claim 1, wherein each of the forwarded frames includes an appended word, the appended word being encoded with an ingress switch engine number and an incoming port number, the ingress switch engine number indicating a specific local switching device, the incoming port number indicating the incoming port number of a port from which unknown address frames are being sent, the ingress switch engine and incoming port numbers being used to allow an egress switch engine

to map the unknown addresses to the ingress switch engine number and the incoming port number.

3. The system of claim 2, wherein the ingress switch engine is the local switching device, and the incoming port is a port connected to the local switching device.

4. The system of claim 1, wherein the remote switching processing device updates the local forwarding database by sending a processing device frame with an appended word.

5. The system of claim 1, wherein the ports are Ethernet ports and the frames being sent, received, and forwarded are Ethernet frames.

6. The system of claim 1, further comprising logic residing on the local switching device to insert a unique MAC address into the local switching device, wherein the unique MAC address is provided to allow the remote switching processing device to uniquely identify the local switching device.

7. The system of claim 1, wherein the unknown address frames are tagged as higher than normal traffic priority.

8. The system of claim 1, further comprising a local processing device coupled to the local switching device, the local processing device allowing localized optimization of

local functions and allowing the remote switching processing device to send frames to the local processing device.

9. A method for monitoring and controlling network traffic in a system having a local switching device and a remote switching processing device, the method comprising:

receiving a frame from a source port, the frame being destined for a destination port indicated by a destination address of said frame;

determining if the destination address of said frame are known in a Media Access Control (MAC) address database;

forwarding the frame to the destination port when the destination address is known in the MAC address database;

sending an unknown destination address frame to all ports asking for a response frame when the destination address is unknown in the MAC address database;

receiving said response frame from a receiving port;

determining if a source address of the response frame is known in the MAC address database; and

forwarding the response frame to the remote processing switching device, wherein the local switching device learns associations between MAC addresses and ports by having the remote switching processing device update the MAC address database corresponding to the local switching device based on the received response frames.

10. The method of claim 9, wherein each of the received frames from a source port and the response frame from a destination port includes an appended word, the appended word being encoded with an ingress switch engine number and an incoming port number, the ingress switch engine number indicating a specific local switching device, the incoming port number indicating the incoming port number of a port from which unknown address frames are being sent, the ingress switch engine and incoming port numbers being used to allow an egress switch engine to map the unknown addresses to the ingress switch engine number and the incoming port number.

11. The method of claim 10, wherein the ingress switch engine is the local switching device, and the incoming port is a port connected to the local switching device.

12. The method of claim 9, wherein the MAC address database is updated by the remote switching processing device sending a processing device frame with an appended word.

13. The method of claim 9, wherein the source and destination ports are Ethernet ports and the frames are Ethernet frames.

14. The method of claim 9, further comprising providing logic residing on the local switching device to insert a unique MAC address into the local switching device, wherein the unique MAC address is provided to allow the remote switching processing device to uniquely identify the local switching device.

15. The method of claim 9, wherein the unknown destination address frames are tagged as higher than normal traffic priority.

16. The method of claim 9, further comprising providing a local processing device coupled to the local switching device, the local processing device allowing localized optimization of local functions and providing the remote switching processing device to send frames to the local processing device.

17. The method of claim 9, further comprising:

determining if a source address of the frame from the source port is known in the MAC address database; and

updating the source address of said frame in the MAC address database if the source address is not known.

18. The method of compiling autonomous forwarding databases using appended word source address port mapping:

transmitting a frame from an ingress switch engine to an egress switch engine;

encoding an ingress switch engine number and an incoming port number in an appended word of the frame, the ingress switch engine number indicating a specific switching device from which the frame is being transmitted, the incoming port number indicating the port number of an incoming port from which the frame originated;

forwarding encoded information to a processing device of the egress switch engine;

determining whether a source address of the frame is previously known; and

allowing the egress switch engine to map an unknown source address to the ingress switch engine number and the incoming port number.

19. The method of claim 18, wherein the appended word resides in the packet header of the frame.

20. The method of claim 18, wherein the ingress switch engine is a local switching device, and the incoming port is a port connected to the local switching device.

21. The method of claim 20, wherein the egress switch engine is also a local switching device.

22. The method of claim 20, wherein the egress switch engine is a remote switching device containing a remote switching processing device.

23. The method of claim 18, wherein the ingress switch engine is a remote switching device containing a remote switching processing device, the incoming port is a port connected to the remote switching device, and the egress switch engine is a local switching device.